

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number	10782554
Filing Date	2004-02-19
First Named Inventor	Brooke L. Small
Art Unit	1797
Examiner Name	Tam M. Nguyen
Attorney Docket Number	210507US (4081-03900)

U.S. PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	6521806	B1	2003-02-18	Tamura, et al.	
	2	6828269	B2	2004-12-07	Commereuc, et al.	
	3	6844290	B1	2005-01-18	Maas, et al.	
	4	6900152	B2	2005-05-31	Yoshida, et al.	
	5	6903042	B2	2005-06-07	Drochon, et al.	
	6	6911505	B2	2005-06-28	Small	
	7	7001964	B2	2006-02-21	Small	
	8	7045632	B2	2006-05-16	Small	

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9	5198401		1993-03-30	Turner, et al.	
10	6548672	B1	2003-04-15	Gibson, et al.	
11	6562973	B1	2003-05-13	Liu	
12	6841693	B1	2005-01-11	Watanabe, et al.	
13	7384886	B2	2008-06-10	Knudsen, et al.	

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	1	20010053742	A1	2001-12-20	Knudsen, et al.	
	2	20050187098	A1	2005-08-25	Knudsen, et al.	
	3	20060128958	A1	2006-06-15	Small	
	4	20070043181	A1	2007-02-22	Knudsen, et al.	

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5	20080058534	A1	2008-03-06	Knudsen, et al.	
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FOREIGN PATENT DOCUMENTS

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	1	8325317	JP		1996-12-10	Tosoh Corp		<input type="checkbox"/>
	2	8325318	JP		1996-12-10	Tosoh Corp		<input type="checkbox"/>
	3	8325319	JP		1996-12-10	Tosoh Corp		<input type="checkbox"/>
	4	8333407	JP		1996-12-17	Sumitomo Chemical Co		<input type="checkbox"/>
	5	9012627	JP		1997-01-14	Mitsubishi Chem Corp		<input type="checkbox"/>
	6	9020692	JP		1997-01-21	Showa Denko KK		<input type="checkbox"/>
	7	9020693	JP		1997-01-21	Showa Denko KK		<input type="checkbox"/>
	8	9040710	JP		1997-02-10	Tosoh Corp		<input type="checkbox"/>

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9	9087318	JP		1997-03-31	Tosoh Corp		<input type="checkbox"/>
10	9143213	JP		1997-06-03	Mitsubishi Chem Corp		<input type="checkbox"/>
11	10007593	JP		1998-01-13	Tosoh Corp		<input type="checkbox"/>
12	10007594	JP		1998-01-13	Tosoh Corp		<input type="checkbox"/>
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14	10007681	JP		1998-01-13	Tosoh Corp		<input type="checkbox"/>
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17	10036433	JP		1998-02-10	Mitsubishi Chem Corp		<input type="checkbox"/>
18	10036435	JP		1998-02-10	Mitsubishi Chem Corp		<input type="checkbox"/>
19	10045634	JP		1998-02-17	Mitsubishi Chem Corp		<input type="checkbox"/>

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20	10045638	JP		1998-02-17	Mitsubishi Chem Corp		<input type="checkbox"/>
21	10045833	JP		1998-02-17	Mitsubishi Chem Corp		<input type="checkbox"/>
22	10060043	JP		1998-03-03	Nippon Polyolefin KK		<input type="checkbox"/>
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24	10087518	JP		1998-04-07	Mitsubishi Chem Corp		<input type="checkbox"/>
25	10101587	JP		1998-04-21	Mitsui Petrochemical Ind		<input type="checkbox"/>
26	10218799	JP		1998-08-18	Mitsubishi Chem Corp		<input type="checkbox"/>
27	11060511	JP		1999-03-02	Mitsubishi Chem Corp		<input type="checkbox"/>
28	11060626	JP		1999-03-02	Mitsubishi Chem Corp		<input type="checkbox"/>
29	11092407	JP		1999-04-06	Tosoh Corp		<input type="checkbox"/>
30	11092408	JP		1999-04-06	Tosoh Corp		<input type="checkbox"/>

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31	2000176291	JP		2000-06-27	Tosoh Corp		<input type="checkbox"/>
32	2000202299	JP		2000-07-25	Tosoh Corp		<input type="checkbox"/>
33	2000212212	JP		2000-08-02	Tosoh Corp		<input type="checkbox"/>
34	2001002724	JP		2001-01-09	Tosoh Corp		<input type="checkbox"/>
35	2001009290	JP		2001-01-16	Tosoh Corp		<input type="checkbox"/>
36	2001096164	JP		2001-04-10	Tosoh Corp		<input type="checkbox"/>
37	2001149788	JP		2001-06-05	Tosoh Corp		<input type="checkbox"/>
38	2001187345	JP		2001-07-10	Tosoh Corp		<input type="checkbox"/>
39	2002045703	JP		2002-02-12	Tosoh Corp		<input type="checkbox"/>
40	2002066329	JP		2002-03-05	Tosoh Corp		<input type="checkbox"/>
41	2002102710	JP		2002-04-09	Tosoh Corp		<input type="checkbox"/>

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42	2002172327	JP		2002-06-18	Tosoh Corp		<input type="checkbox"/>
43	2002200429	JP		2002-07-16	Tosoh Corp		<input type="checkbox"/>
44	2002205960	JP		2002-07-23	Tosoh Corp		<input type="checkbox"/>
45	2002233764	JP		2002-08-20	Tosoh Corp		<input type="checkbox"/>
46	2002233765	JP		2002-08-20	Tosoh Corp		<input type="checkbox"/>
47	2003071294	JP		2003-03-11	Tosoh Corp		<input type="checkbox"/>
48	2003088760	JP		2003-03-25	Tosoh Corp		<input type="checkbox"/>
49	2004136270	JP		2004-05-13	Tosoh Corp		<input type="checkbox"/>
50	2004136271	JP		2004-05-13	Tosoh Corp		<input type="checkbox"/>

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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
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1	Office Action dated April 19, 2007 (8 pages), Application Serial No. 10/783,429 filed on February 20, 2004.	<input type="checkbox"/>
2	Office Action dated September 28, 2007 (8 pages), Application Serial No. 10/783,429 filed on February 20, 2004.	<input type="checkbox"/>
3	RANWELL, A., et al., "Potential application of ionic liquids for olefin oligomerization," Sasol Technology R&D, Sasolburg, South Africa, 2002, pgs. 147-160, American Chemical Society.	<input type="checkbox"/>
4	RAO, GUO-YING, et al., "Coordination mode of the Cr(2-ethylhexanoate)3/triethylaluminum/dimethylpyrrole/tetrachloroethane," 2003, pgs. 80-82, Vol. 30, No. 1, Journal of Beijing University of Chemical Technology, Beijing, China.	<input type="checkbox"/>
5	REAGEN, W. K., "Chromium(II) and (III) pyrrolyl ethylene oligomerization catalysts. Synthesis and crystal structure of square planar Cr(NC4H4)4-2, and pentanuclear (Cr5(NC4H4)10(OC4H8)4)," Symposium on Novel Preparation and Conversion of Light Olefins presented before the division of Petroleum Chemistry, Inc., September 10-15, 1989, pgs. 583-588, American Chemical Society.	<input type="checkbox"/>
6	SCHOFER, SUSAN J., et al., "Studies of a chromium-based ethylene oligomerization system," 1 page, INOR 817.	<input type="checkbox"/>
7	SUI, JUNLONG, et al., "Synthesis of 1 - hexene by trimerization of ethylene," 2001, pgs. 23-26, 43, Vol. 18, No. 2, China Synthetic Resin and Plastics.	<input type="checkbox"/>
8	TAMURA, TAKAO, "Recent trends in a -olefin manufacturing technology," Idemitsu Giho, 1995, pgs. 266-269, Vol. 38, No. 3.	<input type="checkbox"/>
9	TOBISCH, SVEN, et al., "Catalytic linear oligomerization of ethylene to higher a-olefins: insight into the origin of the selective generation of 1-hexene promoted by a cationic cyclopentadienyl-arene titanium active catalyst," Organometallics, 2003, pgs. 5392-5405, Vol. 22, No. 26, American Chemical Society.	<input type="checkbox"/>
10	TOBISCH, SVEN, et al., "Catalytic oligomerization of ethylene to higher linear a-olefins promoted by cationic group 4 cyclopentadienyl-arene active catalysts: a DFT investigation exploring the influence of electronic factors on the catalytic properties by modification of the hemilabile arene functionality," Organometallics, 2004, pgs. 4077-4086, Vol. 23, No. 17, American Chemical Society.	<input type="checkbox"/>
11	TOBISCH, SVEN, et al., "Catalytic oligomerization of ethylene to higher linear a-olefins promoted by cationic group 4 [(n5-Cp-(CMe2-bridge)-Ph)M11(ethylene)2]+ (M = Ti, Zr, Hf) active catalysts: a density functional investigation of the influence of the metal on the catalytic activity and selectivity," J. Am. Chem. Soc., 2004, pgs. 9059-9071, Vol 126, No. 29, American Chemical Society.	<input type="checkbox"/>

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12	TOBISCH, SVEN, et al., "Catalytic oligomerization of ethylene to higher linear α -olefins promoted by cationic group 4 cyclopentadienyl-arene active catalysts: toward the computational design of zirconium- and hafnium-based ethylene trimerization catalysts," <i>Organometallics</i> , 2005, pgs. 256-265, Vol. 24, No. 2, American Chemical Society.	<input type="checkbox"/>
13	VAN RENSBURG, WERNER JANSE, et al., "A DFT study toward the mechanism of chromium-catalyzed ethylene trimerization," <i>Organometallics</i> , 2004, pgs. 1207-1222, Vol. 23, No. 6, American Chemical Society.	<input type="checkbox"/>
14	WU, TIANZHI, et al., "Catalytic trimerization of ethylene by half-sandwich titanium complexes bearing a pendant ethereal group," <i>Journal of Molecular Catalysis A: Chemical</i> , 2004, pgs. 227-229, Vol. 214, Elsevier B.V.	<input type="checkbox"/>
15	YANG, Y., et al., "Roles of chloro compound in homogeneous $[\text{Cr}(2\text{-ethylhexanoate})_3/2,5\text{-dimethylpyrrole}/\text{triethylaluminum}/\text{chlorocompound}]$ catalyst system for ethylene trimerization," <i>Applied Catalysis A: General</i> , 2000, pgs. 29-38, Vol. 193, Elsevier Science B.V.	<input type="checkbox"/>
16	YE, ZHIBIN, et al., "A tandem catalytic system for the synthesis of ethylene-hex-1-ene copolymers from ethylene stock," <i>Macromol. Rapid Commun.</i> , 2004, pgs. 647-652, Vol. 25, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim.	<input type="checkbox"/>
17	YU, ZHI-XIANG, "Theoretical studies of the mechanisms of ethene trimerization by Ta- and Cr-based catalysts," 1 page, INOR 857.	<input type="checkbox"/>
18	YU, ZHI-XIANG, et al., "Why trimerization? Computational elucidation of the origin of selective trimerization of ethene catalyzed by $[\text{TaCl}_3(\text{CH}_3)_2]$ and an agostic-assisted hydride transfer mechanism," <i>Angew. Chem. Int. Ed.</i> , 2003, pgs. 808-811, Vol. 42, No. 7, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim.	<input type="checkbox"/>
19	ADAMS, HARRY, et al., "Complexes of ligands providing endogenous bridges. Part 1. The syntheses and crystal structures of barium and lead(II) complexes of macrocyclic schiff bases derived from heterocyclic dicarbonyls and 1,n-diamino-n'-hydroxyalkanes ($n, n' = 3, 2; 4, 2; \text{ or } 5, 3$)," XP009070491, 1987, pp. 207-218, J. Chem. Soc. Dalton Trans.	<input type="checkbox"/>
20	Advisory Action dated August 9, 2006 (3 pages), Application Serial No. 10/783,429 filed on February 20, 2004.	<input type="checkbox"/>
21	Advisory Action dated March 29, 2007 (3 pages), Application Serial No. 10/783,429 filed on February 20, 2004.	<input type="checkbox"/>
22	Foreign communication from a related counterpart application - International Search Report and Written Opinion, PCT/US2005/042175, August 17, 2006, 9 pages.	<input type="checkbox"/>

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23	Foreign communication from a counterpart application No. CA 2,556,879 filed February 18, 2005 - Filing of Prior Art under Section 34.1 of the Patent Act Protest under Section 10 of the Patent Rules, January 11, 2008, 11 pages.	<input type="checkbox"/>
24	Foreign communication from a counterpart application - Written Opinion, SG 200605612-1, August 28, 2007, 5 pages.	<input type="checkbox"/>
25	LI, YUESHENG, et al., "Preparation of iron- or cobalt-based polynuclear pyridine-containing diimine catalysts for olefin polymerization," XP-002284349, June 14, 2004, 1 page, CAPLUS.	<input type="checkbox"/>
26	Notice of Allowance dated July 28, 2008 (6 pages), Application Serial No. 11/009,916 filed on December 10, 2004.	<input type="checkbox"/>
27	Office Action dated June 26, 2008 (16 pages), Application Serial No. 11/207,232 filed on August 19, 2005.	<input type="checkbox"/>
28	Office Action dated August 20, 2007 (5 pages), Application Serial No. 11/009,916 filed on December 10, 2004.	<input type="checkbox"/>
29	Office Action dated October 10, 2007 (12 pages), Application Serial No. 11/009,916 filed on December 10, 2004.	<input type="checkbox"/>
30	Office Action (Final) dated March 19, 2008 (6 pages), Application Serial No. 11/009,916 filed on December 10, 2004.	<input type="checkbox"/>
31	Patent application entitled "Methods of preparation of an olefin oligomerization catalyst" by Ronald D. Knudsen, et al., filed March 28, 2008, as serial number 12/057,853.	<input type="checkbox"/>
32	Patent application entitled "Processes for dimerizing or isomerizing olefins" by Brooke L. Small, filed December 21, 2007, as serial number 11/963,252.	<input type="checkbox"/>
33	BOOR, JR., JOHN, "Ziegler-natta catalysts and polymerizations,"1979, 1 cover page and 1 publishing page, Academic Press, Inc., New York.	<input type="checkbox"/>

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34	BRINTZINGER, HANS H., et al., "Stereospecific olefin polymerization with chiral metallocene catalysts," Angew. Chem. Int. Ed. Engl., 1995, pp. 1143-1170, Vol. 34, VCH Verlagsgesellschaft mbH, Weinheim.	<input type="checkbox"/>
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